

```
; d s
Set      Items  Description
S1        80    S (GUANINE OR GUANOSINE) (S) RIBOSWITCH
S2        21    RD (unique items)
```

```
; t /3,k/all
```

```
>>>W: KWIC option is not available in file(s): 399
```

2/3,K/1 (Item 1 from file: 5) [Links](#)

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Biosis Previews(R)

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0016144452 Biosis No.: 200600489847

Thermodynamic and kinetic characterization of ligand binding to the purine riboswitch aptamer domain

Author: Gilbert Sunny D; Stoddard Colby D; Wise Sarah J; Batey Robert T (Reprint)

Author Address: Univ Colorado, Dept Chem, Boulder, CO 80309 USA**USA

Author E-mail Address: robert.batey@colorado.edu

Journal: Journal of Molecular Biology 359 (3): p 754-768 JUN 9 2006 2006

ISSN: 0022-2836

Document Type: Article

Record Type: Abstract

Language: English

Abstract: ...coupled to a regulatory switch. Purine riboswitches respond to intracellular concentrations of either adenine or **guanine** /hypoxanthine to control gene expression. The aptamer domain of the purine **riboswitch** contains a pyrimidine residue (Y74) that forms a Watson-Crick base-pairing interaction with the bound purine nucleobase ligand that discriminates between adenine and **guanine**. We sought to understand the structural basis of this specificity and the mechanism of ligand recognition by the purine **riboswitch**. Here, we present the 2,6-diamino-purine-bound structure of a C74U mutant of the xpt-pbuX **guanine riboswitch**, along with a detailed thermodynamic and kinetic analysis of nucleobase recognition by both the native... ..studies demonstrate clearly that the pyrimidine at position 74 is the sole determinant of purine **riboswitch** specificity. In addition, the mutant **riboswitch** binds adenine and adenine derivatives well compared with the **guanine**-responsive **riboswitch**. Under our experimental conditions, 2,6-diaminopurine binds the RNA with $\Delta H = -40.3 \dots \times 10(5) \text{ mM}(-1) \text{ s}(-1)$ for 2-aminopurine binding the adenine-responsive mutant **riboswitch** and 7-deazaguanine-binding **guanine riboswitch**, respectively) of association under varying experimental conditions allowed us to propose a mechanism for ligand recognition by the purine **riboswitch**. A conformationally dynamic unliganded state for the binding pocket is stabilized first by the Watson...

2/3,K/2 (Item 2 from file: 5) [Links](#)

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Biosis Previews(R)

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0015757494 **Biosis No.:** 200600102889

Riboswitches: natural SELEXion

Author: Gilbert S D; Batey R T (Reprint)

Author Address: Univ Colorado, Dept Chem and Biochem, Campus Box 215, Boulder, CO 80309 USA **USA

Author E-mail Address: robert.batey@colorado.edu

Journal: Cellular and Molecular Life Sciences 62 (21): p 2401-2404 NOV 2005 2005

ISSN: 1420-682X

Document Type: Article

Record Type: Abstract

Language: English

Abstract: ...the artificial selection and the natural selection of structured RNAs for small-molecule recognition. The guanine riboswitch structural determination allows us to draw conclusions regarding the apparent increased complexity of the riboswitch aptamers compared to their in-vitro-selected cousins.

2/3,K/3 (Item 3 from file: 5) [Links](#)

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0015717807 Biosis No.: 200600063202

Comparison of mode analyses at different resolutions applied to nucleic acid systems

Author: Van Wynsberghe Adam W; Cui Qiang (Reprint)

Author Address: Univ Wisconsin, Grad Program Biophys, Madison, WI 53706 USA**USA

Author E-mail Address: cui@chem.wisc.edu

Journal: Biophysical Journal 89 (5): p 2939-2949 NOV 2005 2005

ISSN: 0006-3495

Document Type: Article

Record Type: Abstract

Language: English

Abstract: ...mode analyses as applied to two RNA systems, i.e., the hammerhead ribozyme and a **guanine riboswitch**. We show that classical normal-mode analysis can match the magnitude and direction of residue...

Descriptors:

Chemicals & Biochemicals: ...**guanine riboswitch**

2/3,K/4 (Item 4 from file: 5) [Links](#)

Fulltext available through: [USPTO Full Text Retrieval Options](#) [SCIENCEDIRECT](#)

Biosis Previews(R)

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0015691082 Biosis No.: 200600036477

Guanine riboswitch crystal structure as a basis for ligand specificity by a natural RNA aptamer

Author: Gilbert Sunny D (Reprint); Wise Sarah J; Love Crystal; Montange Rebecca K; Batey Robert T

Author E-mail Address: robert.batey@colorado.edu

Journal: Journal of Biomolecular Structure and Dynamics 22 (6): p 800 JUN 2005 2005

Conference/Meeting: 14th Conversation in Biomolecular Stereodynamics Albany, NY, USA June 14 -18, 2005; 20050614

ISSN: 0739-1102

Document Type: Meeting; Meeting Abstract

Record Type: Citation

Language: English

Guanine riboswitch crystal structure as a basis for ligand specificity by a natural RNA aptamer

Descriptors:

Chemicals & Biochemicals: ...guanine riboswitch;

2/3,K/5 (Item 5 from file: 5) [Links](#)

Fulltext available through: [Proceedings of the National Academy of Sciences \(PNAS\)](#) [USPTO Full Text](#)
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0015267313 Biosis No.: 200500174049

An intermolecular base triple as the basis of ligand specificity and affinity in the guanine- and adenine-sensing riboswitch RNAs

Author: Noeske Jonas; Richter Christian; Grundl Marc A; Nasiri Hamid R; Schwalbe Harald (Reprint); Woehnert Jens

Author Address: Ctr Biomol Magnet ResonanceInst Organ Chem and Chem Biol, Univ Frankfurt, Marie Curie Str 11, D-60439, Frankfurt, Germany**Germany

Author E-mail Address: schwalbe@nmr.uni-frankfurt.de; jewoe@nmr.uni-frankfurt.de

Journal: Proceedings of the National Academy of Sciences of the United States of America 102 (5); p 1372-1377
February 1, 2005 2005

Medium: print

ISSN: 0027-8424 (ISSN print)

Document Type: Article

Record Type: Abstract

Language: English

An intermolecular base triple as the basis of ligand specificity and affinity in the guanine- and adenine-sensing riboswitch RNAs

Abstract: ...and affinity. In *Bacillus subtilis*, two classes of riboswitches have been described that discriminate between guanine and adenine despite an extremely high degree of homology both in their primary and secondary structure. We have identified intermolecular base triples between both purine ligands and their respective riboswitch RNAs by NMR spectroscopy. Here, specificity is mediated by the formation of a Watson-Crick base pair between the guanine ligand and a C residue or the adenine ligand and a U residue of the cognate riboswitch RNA, respectively. In addition, a second base-pairing interaction common to both riboswitch purine complexes involves a uridine residue of the RNA and the N3/N9 edge of... ...change in specificity upon a C to U mutation in the core of the purine riboswitch RNAs and the differences in the binding affinities for a number of purine analogs.

2/3,K/6 (Item 6 from file: 5) [Links](#)

Fulltext available through: [ScienceDirect \(Elsevier\)](#) [USPTO Full Text Retrieval Options](#) [SCIENCEDIRECT](#)
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0015266303 **Biosis No.:** 200500173039

Riboswitch structures: Purine ligands replace tertiary contacts

Author: Lescoute Aurdie (Reprint); Westhof Eric

Author Address: CNRSUPR9002Inst Biol Mol and Cellulaire, Univ Strasbourg 1, 15 Rue Rene Descartes,
F-67084, Strasbourg, France**France

Journal: Chemistry & Biology (Cambridge) 12 (1): p 10-13 January 2005 2005

Medium: print

ISSN: 1074-5521

Document Type: Article

Record Type: Abstract

Language: English

Abstract: Two recent reports describe the fascinating crystal structures of the G- **riboswitch** complexed to three different purine ligands, hypoxanthine (1), **guanine**, and adenine (2).

2/3,K/7 (Item 7 from file: 5) [Links](#)

Fulltext available through: [American Society for Microbiology](#) [USPTO Full Text Retrieval Options](#)
[SCIEDIRECT](#)

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0015250276 Biosis No.: 200500156448

The purine efflux pump PbuE in *Bacillus subtilis* modulates expression of the PurR and G-box (XptR) regulons by adjusting the purine base pool size

Author: Nygaard Per; Saxild Hans H (Reprint)

Author Address: BioCentrumSect Mol Microbiol, Tech Univ Denmark, Bldg 301, DK-2800, Lyngby, Denmark**Denmark

Author E-mail Address: hhs@biocentrum.dtu.dk

Journal: Journal of Bacteriology 187 (2): p 791-794 January 2005 2005

Medium: print

ISSN: 0021-9193

Document Type: Article

Record Type: Abstract

Language: English

Abstract: ...switch-control led transcription termination mechanism. The G-box regulon effector molecules are hypoxanthine and **guanine**. pbuE encodes a purine base efflux pump and is now recognized as belonging to a third purine regulon. The expression of the pbuE gene is positively regulated by a **riboswitch** that recognizes adenine. Here we show that the expression of pbuE'-lacZ transcriptional fusions are...

2/3,K/8 (Item 8 from file: 5) [Links](#)

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0015236638 Biosis No.: 200500143703

Structural basis for discriminative regulation of gene expression by adenine- and guanine-sensing mRNAs

Author: Serganov Alexander; Yuan Yu-Ren; Pikovskaya Olga; Polonskaia Anna; Malinina Lucy; Phan Anh Tuan; Hobartner Claudia; Micura Ronald; Breaker Ronald R; Patel Dinshaw J (Reprint)

Author Address: Struct Biol Program, Mem Sloan Kettering Canc Ctr, 1275 York Ave, New York, NY, 10021, USA**USA

Author E-mail Address: pateld@mskcc.org

Journal: Chemistry & Biology (Cambridge) 11 (12): p 1729-1741 December 2004 2004

Medium: print

ISSN: 1074-5521

Document Type: Article

Record Type: Abstract

Language: English

Abstract: ...downstream regions, harboring expression-controlling elements. We report the crystal structures of the add A-riboswitch and xpt G- riboswitch aptamer modules that distinguish between bound adenine and **guanine** with exquisite specificity and modulate expression of two different sets of genes. The riboswitches form... ..entire periphery. Recognition specificity is associated with Watson-Crick pairing of the encapsulated adenine and **guanine** ligands with uridine and cytosine, respectively.

2/3,K/9 (Item 9 from file: 5) [Links](#)

Fulltext available through: [SCIENCEDIRECT](#)

Biosis Previews(R)

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0015212719 Biosis No.: 200500118897

A probabilistic model for the evolution of RNA structure

Author: Holmes Ian (Reprint)

Author Address: Dept Bioengn, Univ Calif Berkeley, Berkeley, CA, 94720, USA**USA

Author E-mail Address: ihh@berkeley.edu

Journal: BMC Bioinformatics 5 (October 26): October 26, 2004 2004

Medium: print

ISSN: 1471-2105 (ISSN online)

Document Type: Article

Record Type: Abstract

Language: English

Abstract: ...and its weaknesses are discussed with reference to four examples of functional ncRNA sequences: a riboswitch (guanine), a zipcode (nanos), a splicing factor (U4) and a ribozyme (RNase P). As shown by...

Descriptors:

Chemicals & Biochemicals: ...guanine--... ..riboswitch;

2/3,K/10 (Item 10 from file: 5) [Links](#)

Fulltext available through: [Ebsco Host EJS \(Electronic Journals Service\)](#) [Nature American, Inc. \(Publisher Group\)](#) [USPTO Full Text Retrieval Options](#) [SCIENCEDIRECT](#) [ProQuest](#)
Biosis Previews(R)

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0015145008 Biosis No.: 200500052073

Structure of a natural guanine-responsive riboswitch complexed with the metabolite hypoxanthine

Author: Batey Robert T (Reprint); Gilbert Sunny D; Montange Rebecca K

Author Address: Dept Chem and Biochem, Univ Colorado, 215 UCB, Boulder, CO, 80309, USA**USA

Author E-mail Address: robert.batey@colorado.edu

Journal: Nature (London) 432 (7015): p 411-415 November 18, 2004 2004

Medium: print

ISSN: 0028-0836 _(ISSN print)

Document Type: Article

Record Type: Abstract

Language: English

Structure of a natural guanine-responsive riboswitch complexed with the metabolite hypoxanthine

Abstract: ...untranslated region of many mRNAs of genes involved in purine metabolism and transport contain a guanine-responsive riboswitch that directly binds guanine, hypoxanthine or xanthine to terminate transcription^{3,4}. Here we report the crystal structure at 1.95 Å resolution of the purine-binding domain of the guanine riboswitch from the xpt-pbuX operon of *B. subtilis* bound to hypoxanthine, a prevalent metabolite in...

2/3,K/11 (Item 11 from file: 5) [Links](#)

Fulltext available through: [USPTO Full Text Retrieval Options](#) [SCIENCEDIRECT](#)

Biosis Previews(R)

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0014769323 Biosis No.: 200400136677

Adenine riboswitches and gene activation by disruption of a transcription terminator.

Author: Mandal Maumita; Breaker Ronald R (Reprint)

Author Address: Department of Molecular, Cellular and Developmental Biology, Yale University, PO Box 208103, New Haven, CT, 06520-8103, USA**USA

Author E-mail Address: ronald.breaker@yale.edu

Journal: Nature Structural & Molecular Biology 11 (1): p 29-35 January 2004 2004

Medium: print

ISSN: 1545-9993 _(ISSN print)

Document Type: Article

Record Type: Abstract

Language: English

Abstract: A class of riboswitches that recognizes **guanine** and discriminates against other purine analogs was recently identified. RNAs that carry the consensus sequence and structural features of **guanine** riboswitches are located in the 5' untranslated region (UTR) of numerous prokaryotic genes, where they... ..of proteins involved in purine salvage and biosynthesis. We report that three representatives of this **riboswitch** class bind adenine with values for apparent dissociation constant (apparent K_d) that are several orders of magnitude lower than those for binding **guanine**. Because preference for adenine is attributable to a single nucleotide substitution, the RNA most likely recognizes its ligand by forming a Watson-Crick base pair. In addition, the adenine **riboswitch** associated with the ydhL gene of Bacillus subtilis functions as a genetic 'on' switch, wherein...

Descriptors:

Chemicals & Biochemicals: ...guanine-sensing riboswitch--

2/3,K/12 (Item 1 from file: 98) [Links](#)

General Sci Abs

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05506981 H.w. Wilson Record Number: BGSA04256981

Structure of a natural guanine-responsive riboswitch complexed with the metabolite hypoxanthine.

Nature (Nature) v. 432 (Nov. 18 2004) p. 411-15

ISSN: 0028-0836

Language: English

Country Of Publication: United Kingdom

Structure of a natural guanine-responsive riboswitch complexed with the metabolite hypoxanthine.

Abstract: ...untranslated region of many mRNAs of genes involved in purine metabolism and transport contain a guanine-responsive riboswitch that directly binds guanine, hypoxanthine or xanthine to terminate transcription. Here we report the crystal structure at 1.95 Å resolution of the purine-binding domain of the guanine riboswitch from the xpt-pbuX operon of B. subtilis bound to hypoxanthine, a prevalent metabolite in...

2/3,K/13 (Item 1 from file: 135) [Links](#)

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0000120251 (USE FORMAT 7 OR 9 FOR FULLTEXT)

Molecule can discriminate between two metabolites to manufacture proteins

Health & Medicine Week, January 12, 2004, p.168

DOCUMENT TYPE: Expanded Reporting LANGUAGE: English

RECORD TYPE: FULLTEXT

Word Count:

227

... and, together with other proteins, act to control gene expression. A previous study described a **riboswitch** that controls gene expression in response to binding the purine base **guanine**. In this study, Mandal and Breaker showed that riboswitches that respond to the closely related...

...They demonstrated that a single change in the RNA can alter the binding preference of **guanine**- and adenine-sensing riboswitches between **guanine** and adenine.

The adenine riboswitch functions as a genetic on-switch, whereby adenine binding to...

2/3,K/14 (Item 1 from file: 144) Links

Pascal

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17300602 PASCAL No.: 05-0374582

Structure of a natural guanine-responsive riboswitch complexed with the metabolite hypoxanthine

BATEY Robert T; GILBERT Sunny D; MONTANGE Rebecca K

Department of Chemistry and Biochemistry, 215 UCB, University of Colorado
, Boulder, Colorado 80309, United States
Journal: Nature : (London), 2004
, 432 (7015) 411-415

Language: English

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... untranslated region of many mRNAs of genes involved in purine metabolism and transport contain a **guanine-responsive riboswitch** that directly binds **guanine**, hypoxanthine or xanthine to terminate transcription SUP 3 SUP , SUP 4 . Here we report the crystal structure at 1.95 Å resolution of the purine-binding domain of the **guanine riboswitch** from the xpt-pbuX operon of B. subtilis bound to hypoxanthine, a prevalent metabolite in...

2/3,K/15 (Item 1 from file: 155) [Links](#)

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MEDLINE(R)

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19599358 **PMID:** 16209348

[Riboswitches]

Przelaczniki RNA.

Bugala Katarzyna; Zywicki Marek; Wyszko Eliza; Barciszewska Mirosława Z; Barciszewski Jan
Institute of Bioorganic Chemistry Polish Academy of Sciences, 12 Noskowskiego St., 61-704 Poznan, Poland.

Postepy biochemii (Poland) 2005 , 51 (2) p111-9 , ISSN: 0032-5422--Print **Journal Code:** 0023525

Publishing Model Print

Document type: Journal Article; Review ; English Abstract

Languages: POLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

...to be specific for flavin mononucleotide, thiamine, thiamine pyrophosphate, adenosylcobalamin, S-adenosylmethionine, lysine, glycine, adenine, **guanine** and glucosamine-6-phosphate. Some of them have been found also in fungi (*Neurospora crassa*) and plants (*Oryza sativa*, *Arabidopsis thaliana*). In human only one **riboswitch** with binding capacity for 2-aminopurine, has been found. Occurrence of riboswitches in all of...

2/3,K/16 (Item 1 from file: 266) [Links](#)

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00597620

Identifying No.: 1R01GM073850-01 **Agency Code:** CRISP

Basis of gene regulation by a guanine-binding mRNA

Principal Investigator: BATEY, ROBERT T

Address: ROBERT.BATEY@COLORADO.EDU UNIVERSITY OF COLORADO 215 UCB BOULDER, CO 80309

Performing Org.: UNIVERSITY OF COLORADO AT BOULDER , BOULDER , COLORADO

Sponsoring Org.: NATIONAL INSTITUTE OF GENERAL MEDICAL SCIENCES

Dates: 2004/01/05 To 2003/31/10 **Fy :** 2005

Summary: ...elements, dubbed riboswitches, are able to directly effect gene regulation by binding a small molecule (guanine, lysine or thiamine pyrophosphate, for example). In *B. subtilis*, these RNA elements appear to control...
...mechanism within the cell. To understand how these elements control gene expression crystals of a **guanine riboswitch-ligand complex** that diffract X-rays to at least 2.9 Å resolution have been...

2/3,K/17 (Item 1 from file: 357) [Links](#)

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Derwent Biotech Res.

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0408054 DBA Accession No.: 2006-21550

Turning inhibitors into activators: A hammerhead ribozyme controlled by a guanine quadruplex guanine quadruplex-controlled hammerhead ribozyme for inhibitor-to-activator riboswitch study and potential gene therapy

Author: WIELAND M; HARTIG JS

Corporate Affiliate: Univ Konstanz

Corporate Source: Hartig JS, Univ Konstanz, Dept Chem, Univ Str 10, D-78457 Constance, Germany

Journal: ANGEWANDTE CHEMIE-INTERNATIONAL EDITION (45, 35, 5875-5878) 2006

ISSN: 1433-7851

Language: English

Turning inhibitors into activators: A hammerhead ribozyme controlled by a guanine quadruplex guanine quadruplex-controlled hammerhead ribozyme for inhibitor-to-activator riboswitch study and potential gene therapy

Descriptors: guanine quadruplex-controlled hammerhead ribozyme, porphyrinoid, porphyrin TMPyP4 evaluation, appl. inhibitor-to-activator riboswitch study, pot. gene therapy, tumor xenograft growth inhibition, antiproliferative therapeutic RNA enzyme het-N ring...

2/3,K/18 (Item 2 from file: 357) [Links](#)

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Derwent Biotech Res.

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0385119 **DBA Accession No.:** 2005-30825

Riboswitches: natural SELEXion involving X-ray crystallography

Author: GILBERT SD; BATEY RT

Corporate Affiliate: Univ Colorado

Corporate Source: Batey RT, Univ Colorado, Dept Chem and Biochem, Campus Box 215, Boulder, CO 80309
USA

Journal: CELLULAR AND MOLECULAR LIFE SCIENCES (62, 21, 2401-2404) 2005

ISSN: 1420-682X

Language: English

Abstract: ...the artificial selection and the natural selection of structured RNAs for small-molecule recognition. The **guanine riboswitch** structural determination allows us to draw conclusions regarding the apparent increased complexity of the **riboswitch** aptamers compared to their in-vitro-selected cousins. (4 pages)

2/3,K/19 (Item 3 from file: 357) [Links](#)

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Derwent Biotech Res.

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0351977 DBA Accession No.: 2004-24269

Structure of a natural guanine-responsive riboswitch complexed with the metabolite hypoxanthine riboswitch structure determination for RNA-based biosensor construction

Author: BATEY RT; GILBERT SD; MONTANGE RK

Corporate Affiliate: Univ Colorado

Corporate Source: Batey RT, Univ Colorado, Dept Chem and Biochem, 215 UCB, Boulder, CO 80309 USA

Journal: NATURE (432, 7015, 411-415) 2004

ISSN: 0028-0836

Language: English

Structure of a natural guanine-responsive riboswitch complexed with the metabolite hypoxanthine riboswitch structure determination for RNA-based biosensor construction

Abstract: ...untranslated region of many mRNAs of genes involved in purine metabolism and transport contain a guanine-responsive riboswitch that directly binds guanine, hypoxanthine or xanthine to terminate transcription(3,4). Here we report the crystal structure at 1.95 Angstrom resolution of the purine-binding domain of the guanine riboswitch from the xpt-pbuX operon of B. subtilis bound to hypoxanthine, a prevalent metabolite in...

Descriptors: natural guanine-responsive riboswitch struct. det., metabolite hypoxanthine, RNA folding, appl. RNA-based biosensor construction, Bacillus subtilis cellular metabolism...

2/3,K/20 (Item 1 from file: 399) [Links](#)

Fulltext available through: [ScienceDirect \(Elsevier\)](#) [USPTO Full Text Retrieval Options](#) [SCIENCEDIRECT](#)
CA SEARCH(R)

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145450503 CA: 145(23)450503y JOURNAL

**Thermodynamic and Kinetic Characterization of Ligand Binding to the Purine Riboswitch Aptamer Domain.
(Erratum to document cited in CA145:139561)**

Author: Gilbert, Sunny D.; Stoddard, Colby D.; Wise, Sarah J.; Batey, Robert T.

Location: Department of Chemistry and Biochemistry, University of Colorado, Boulder, CO, 80309, USA

Journal: J. Mol. Biol.

Date: 2006

Volume: 363 **Number:** 2 **Pages:** 624

CODEN: JMOBAK

ISSN: 0022-2836

Publisher Item Identifier: 0022-2836(06)01132-6

Language: English

Publisher: Elsevier Ltd.

2/3,K/21 (Item 2 from file: 399) [Links](#)

Fulltext available through: [USPTO Full Text Retrieval Options](#) [SCIENCEDIRECT](#) [Cell Press Online](#)
CA SEARCH(R)

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139175298 CA: 139(12)175298u JOURNAL

Riboswitches control fundamental biochemical pathways in *Bacillus subtilis* and other bacteria

Author: Mandal, Maumita; Boese, Benjamin; Barrick, Jeffrey E.; Winkler, Wade C.; Breaker, Ronald R.

Location: Department of Molecular, Cellular, and Developmental Biology, Yale University, New Haven, CT, 06520, USA

Journal: Cell (Cambridge, MA, U. S.)

Date: 2003

Volume: 113 **Number:** 5 **Pages:** 577-586

CODEN: CELLB5

ISSN: 0092-8674

Language: English

Publisher: Cell Press

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[File 136] **BioEngineering Abstracts** 1966-2006/Oct

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[File 266] **FEDRIP** 2006/Aug
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[File 315] **ChemEng & Biotec Abs** 1970-2006/Nov
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[File 357] **Derwent Biotech Res.** _1982-2006/Dec W3
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